Thai Journal of Obstetrics and Gynaecology
March 2002, Vol. 14, pp. 59-62

GYNAECOLOGY

Comparison of Cervical PAP smear, Colposcopic Impression and Histologic Result

Pittaya Vapattanawong MD,*
Pornsom Hutacharern MD.**

* *Department of Obstetrics and Gynecology, Pranangklao Hospital, Nonthaburi, Thailand*
**Department of Obstetrics and Gynecology, Rajavithi Hospital, Bangkok, Thailand*

ABSTRACT

Objective To evaluate the diagnostic accuracy of cytology and colposcopic impression in women with abnormal cervical PAP smear using pathological result as the "gold standard".

Design Retrospective study.

Setting The outpatient colposcopic clinic of Rajavithi Hospital, Thailand.

Cases The cases of 3,399 patients were reviewed. Of these, the mean age of 39.0 years (range, 16-95 years) had pathological reports.

Result 1,259 patients had PAP smear, colposcopic impression, and pathological reports. Compared with pathological reports, grading of cytology was concurrent in 43.76% of cases of abnormal PAP smear, and in 51.90% after colposcopic impression. In 152 patients with PAP smear class III (these smears were not graded by CIN), the correlation was 63.15% when comparing cervical intraepithelial neoplasia(CIN) histology with pathological result. The mean age of women with LSIL, HSIL, and cancer (CA) were 34.7, 38.8, and 48.2 years respectively. Out of 16 atypical PAP smears 3 were histologically HSIL. 35.49% of LSIL PAP smears were histologically HSIL and 2.73% CA.

Conclusion We found that cytologic concordance with pathological result was 43.76% and 51.90% after colposcopic impression. Colposcopy is a better tool for accuracy than PAP smear.

Key words : Cervical PAP smear, colposcopic impression, retrospective comparison

Cytologic screening programs for cervical cancer were introduced to previous unscreened populations in the 1940s and 1950s.[1] Reports comparing the accuracy of colposcopy to cytologic methods appeared in many journals.[2-6] PAP smear screening has achieved a remarkable decline in cervical cancer mortality rate as a result of early diagnosis of clinical and preclinical lesion. Colposcopy with directed biopsy allows for topographic mapping and grading of squamous intraepithelial lesion (SIL) and is therefore indicated in patients with abnormal PAP smear, facilitating the planning of appropriate therapy. Earlier studies have demonstrated a close relationship between histologic and cytologic diagnosis of SIL grading.[2] Colposcopy is performed only on patients with a high degree of abnormality and repeated PAP smears are taken after a short interval when patients present a mild abnormality at cytology.[6]

We have conducted a study of abnormal PAP smears to determine diagnostic accuracy in

comparison to colposcopic impression and pathological report. Using histology is the "gold standard".

Materials and Methods

We reviewed the records of all patients received at the colposcopic clinic at Rajavithi Hospital between January 1, 1988 til December 31, 1997. The patients with abnormal PAP smears had colposcopy. Colposcopic examination was performed using standard technique. The colposcopic impression was the interpretation and colposcopy-directed biopsy (CDB) was performed in suspicious areas. The patients with unsatisfactory finding or CDB not related with cytologic study, loop electrosurgical excision procedure (LEEP) or conization would be considered. The hysterectomy may be considered in the patients with post LEEP or post conization. We selected abnormal PAP smear and colposcopic impression to compare with the highest severity of pathological report. Gynecologic history, examination, colposcopy, LEEP, and conization were performed by Gynecologic Oncologists. The hysterectomy may be performed by Gynecologist. PAP smear screenings were done by general gynecologists and histology were reported by pathologists.

Because of the period of time covered by this review, the terminology used in cytologic reports belonged to several systems, the Papanicolaou system, the Dysplasia/CIN system and the Bethesda system.[7-8] In this study, the slides were not reviewed, all terminology was converted to the Bethesda system. Papanicolaou Class III reports were not converted to the Bethesda system.

The highest severity of pathology were performed as the çgold standardé to which abnormal PAP smear and colposcopic impression were compared.

The following categories are described:

- Negative: Negative for malignancy, inflammation
- Atypia: Cellular atypia, atypical cells, AGUS, ASCUS
- LSIL: Low-grade squamous intraepithelial lesion, CIN I, mild dysplasia, HPV
- HSIL: High-grade squamous intraepithelial lesion, CIN II-III, moderate to severe dysplasia, carcinoma in situ
- CA: Microinvasive, invasive carcinoma

Only the records of patients who underwent cytologic (PAP smear), colposcopic impression and the highest histologic examinations were deemed assessable. Women with no results to compare to were excluded.

Results

Three thousand three hundred and ninety-nine records were reviewed. Patients with a mean age of 39.0 years (range, 16-95 years) had histology only, and 1,259 patients had both cytologic and histologic results. The mean of age, gravida, parity of patient who underwent CDB, LEEP, conization, and hysterectomy are shown in Table I. One hundred and fifty two patients were reported as Class III, and were not tallied in Table II, which shows the relationship between cytology and histology. The cytologic concordance was 551 out of 1,259 cases or 43.76%.

Table III shows the relationship between colposcopic impression and pathologic results. The accuracy of colposcopic impression was 667 out of 1,285 cases or 51.90%.

Table 1. Mean of age, gravida, parity and pathological results

Cervical biopsy	Negative	LSIL	HSIL	CA	MEAN
Age	38.8	34.7	38.8	48.2	39.0
Gravida	2.6	2.2	2.9	4.1	2.8
Parity	2.1	1.7	2.1	3.4	2.1

Table 2. Cytologic reports compared with pathological results

		Cervical histology				
		Negative	**LSIL**	**HSIL**	**CA**	**Total**
Pap smear	LSIL	204	158	208	16	586
	HSIL	72	46	338	82	538
	CA	13	1	66	55	135
Total		289	205	612	153	1,259

Table 3. Colposcopic impression compared with pathological results

		Cervical histology				
		Negative	**LSIL**	**HSIL**	**CA**	**Total**
Colpo. impression	LSIL	223	168	150	7	548
	HSIL	67	51	362	41	521
	CA	24	2	53	137	216
Total		314	221	565	185	1,285

Of 152 cases of PAP smear graded Class III (LSIL and HSIL), 96 cases were concordant by biopsy (63.15%), and 56 cases differed.

Out of 16 cases with atypia by cytology, 3 cases had histologic HSIL. Of 586 cases of LSIL diagnosed by PAP smear, 208 (35.49%) had HSIL and 16 (2.73%) had CA by histology.

Discussion

In our selected group of women with any degree of abnormal cervical PAP smear referred to the colposcopic clinic, we found that the mean age increased with the severity of the cervical pathology. The mean ages of patients with LSIL, HSIL and CA were 34.7,38.8, and 48.2 years, respectively. The mean parities of patients with LSIL, HSIL and CA were 1.7, 2.1, and 3.4 children respectively.

Colposcopy was useful to evaluate women with abnormal cervical cytology or after appropriate treatments. Colposcopy helps distinguish between CIN and CA. This study presents the correlation between PAP smear, colposcopic impression, and pathological result.

Cytologic and pathology concordance was 43.76% (551 patients out of 1,259) in our study. Other studies of cytologic and CDB showed concordance in 88% and 78.17% of cases.[3,4] Our results are somewhat different, perhaps because in the latter studies, results were analyzed according to the Dysplasia/CIN System. Colposcopic impression were more accurate than cytology. Colposcopic examination detected CA in 63.42% of cases proven by histology and PAP smear in 40.74% of cases only. For class III (ungraded CIN), concordance with histology was 63.15%, correlation which was more than overall grading cytology.

Out of 16 cases of cellular atypia by histology revealed 3 HSIL (18.75%). Of 586 cases of LSIL PAP smears histology diagnosed CA in 16 (2.73%) and HSIL in 208 cases (35.49%). However, 300 patients (51.19%), who had LSIL PAP smear but had normal colposcopic finding, did not have biopsy confirmed. Atypical smears include ASCUS, or AGUS when cytologic glandular abnormalities are present, in these cases, the canal needs to be evaluated. ASCUS and LSIL smears may be followed without colposcopy.[1,8]

Management strategies for women with abnormal cervical smears vary widely. It has been recommended that women presenting with mild dysplasia should be referred for definitive pathological diagnosis by CDB, although recently a more conservative strategy for cytologic surveillance of mild dysplasia has been suggested.[9] If repeated smears show persistent abnormalities, colposcopy and directed biopsy are indicated.[1,8] Our study show that patients with smears indicative of AGUS, ASCUS and LSIL should have colposcopy-directed biopsies of abnormal areas of the cervix.

Screening by PAP smears have proven effective in reducing the incidence of cervical cancer, but there have been concerns on diagnostic accuracy. The colposcopy-directed biopsies are a better tool for accuracy than PAP smear. Atypical PAP smears and LSIL PAP smears may be upgraded histologically to HSIL and CA. All women with abnormal cytology should therefore be referred for colposcopy and histological investigation.

In conclusion, we found that cytologic concordance with histology was 43.76% and in 51.90% after colposcopic impression. Consequently, it may be concluded that colposcopy assures greater accuracy than the PAP smear.

References

1. Wright TC Jr, Richart RM. Pathogenesis and diagnosis of preinvasive lesion of the lower genital tract. In : Hoskins WJ, Perez CA, Young RC, editors. Principles and practice of gynecologic oncology. 2nd ed. Philadelphia : Lippincott-Raven, 1997: 675-715.
2. Kierkegaard O, Byrjalsen C, Frandsen KH, Hensen KC, Frydenberg M. Diagnostic accuracy of cytology and colposcopy in cervical squamous intraepithelial lesion. Acta Obstet Gynecol Scand 1994;73:648-51.
3. Srisomboon J, Tangchaitrong C, Bhusawang Y, Chairatana A. Evaluation of colposcopic accuracy in diagnosis of cervical neoplasia. J Med Assoc Thai 1996;79:423-7.
4. Srisupundit S, Bunlungpoti S. The correlation between colposcopic directed biopsy, cervical cytology and cervical conization. J Med Ass Thailand 1979;62:174-8.
5. Spitzer M, Ryskin M, Chernys A, Shifrin A. The value of Repeat Pap smear at the time of initial colposcopy. Gynecol Oncol 1997;67:3-7.
6. Maggi R, Zannoni E, Giorda G, Biraghi P, Sideri M. Comparison of repeat smear, colposcopy, and colposcopically directed biopsy in the evaluation of the mildly abnormal smear. Gynecol Oncol 1989;35:294-6.
7. Jones III HW. Impact of the Bethesda system. Cancer 1995;76:1914-7.
8. Reid R. Preinvasive disease. In : Berek JS, Hacker NF, editors. Practical gynecologic oncology 2nd ed. Baltimore: Williams & Wilkins, 1994;201-41.
9. Kirby AJ, Spiegelhalter DJ, Day NE, Fenton L, Swanson K, Mann EM, et al. Conservative treatment of mild/ moderate cervical dyskaryosis: long-term out come. Lancet 1992; 339: 828-31.